

3 DOCUMENT-IDENTIFIER: US 5690618 A

TITLE: Electronic syringe

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BSPR:

The present invention relates to an electronic syringe, and more particularly to a compact, pen-style grip, electronic syringe that allows a practitioner to administer injections or aspirations at a controlled rate and with a precise degree of hand control thereby minimizing or eliminating patient fear and discomfort.

BSPR:

Electronic syringes are known in the art. Typical uses for such devices include injecting biocompatible material, specifically anaesthetic such as block, conduction and para-apical anaesthesia, through bone tissue and administering insulin and other pharmaceuticals.

BSPR:

Thus, the present invention relates to an electronic syringe. As used throughout this specification the term "electronic syringe" has a

broad meaning  
and is intended to encompass a device used for injection or  
**aspiration**, as  
warranted by the intended application.

DEPR:

It is contemplated that the materials and means described above  
may be  
substituted without departing from the spirit and scope of the  
invention. For  
example, although the above-described drive system employed an  
electric lead  
screw device, it is contemplated that pneumatic cylinders, solenoid,  
electromagnetic or hydraulic actuators could also be employed.  
Also, the  
electronic control means may be any suitable device including an  
application  
specific integrated circuit (ASIC) or a micro controller. It is also  
contemplated that a reset switch would be provided on syringe 10  
to enable the  
practitioner to reverse the injection procedure at any time. It is  
further  
contemplated that the present electronic **syringe is also suitable  
for**  
**aspiration** of various body fluids such as bone marrow, blood,  
excess joint  
fluids and the like. In this case drive system 42 could be provided  
with a  
sliding feature and a plunger engagement means which would  
allow an empty  
ampoule to be filled with any of the above-identified fluids.

CLPR:

9. An electronic syringe according to claim 8, wherein said lead screw and said lead nut in combination provide a backlash, said backlash providing self aspiration of said ampoule.